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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/318,682

05/25/1999

ANIL M. MURCHING

6748-US

1767

7812 7590 08/23/2004

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EXAMINER

CHAWAN, SHEELA C

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/318,682

Applicant(s)

MURCHING ET AL.

Examiner

Sheela C Chawan

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Appeal Brief

1. In view of the Appeal Brief filed on June 9, 2004 PROSECUTION IS HEREBY REOPENED. A new grounds of rejection set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 U.S.C. § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if

the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Qian et al. (US. 6,404,900 B1).

As to claim 1, Qian discloses a method of performing semi-automatic tracking of colored objects within a video image sequence (column 4, lines 18-24; a face tracking system is used as an object tracking) comprising steps of:

separating objects within an initial frame of the video image sequence on the basis of color (column 4, lines 29-39; current input image 14 provide an initial frame and face regions corresponds to objects and tracked face regions are extracted or separated; see figures see figures 2-4; facial regions 34, 42, 44 are separated objects in a frame 40; column 5, lines 20-23; location of faces are estimated based on color filter);

receiving a user-provided input that selects an object of interest from the separated objects by a user identifying a centroid of the object of interest (column 5, lines 23-49; column 7, lines 54-57; user can select the region of interest, in this case the region or object of interest is facial regions as shown by figures 2-5; user can eliminate or substitute background of);

tracking the object of interest through successive frames of the video image sequence using Kalman predictive algorithm applied to the centroid (column 6 line 64 to column 7 line 38; Kalman predictor, Kalman corrector and Kalman gain are used for tracking the object of interest).

As to claim 2, Qian discloses the method wherein the tracking step comprises the step of:

from the initial frame determining a position and velocity for the centroid (column 6 line 64 to column 7 line 12);

for each successive frame (column 4, lines 30-34; video sequence provides a successive frame or in column 7, lines 33-38; subsequent frames) predicting a position of the centroid (at least column 5, lines 20-57);

from the predicted position extracting a connected group of blocks that belong to the object of interest (at least column 5 lines 3-19; clustering provides a connected group of blocks; in this case cluster of "1" defines the facial region and "0" defines the background);

measuring the position of the centroid in the successive frame from the connected group of blocks (at least column 5, lines 20-57; estimation of center position provides a centroid position);

smoothing the measured position and velocity of the centroid (column 6 line 67 to column 7 line 38).

As to claim 3, Qian discloses the method further comprising the steps of:

detecting whether the centroid in the successive frame is within the object of interest and field of view (column 5 line 50 to column 6 line 5);

applying an error recovery scheme to re-identify the object of interest in the successive frame (column 5 line 50 to column 6 line 63; (standard deviation, mean

value, scaling factor are used for error recovery or for correction of center position of the face region).

As claim 4, see at least rejection of claim 1 above.

As per claim 5, Qian discloses the method according to claim 4, wherein step (c) includes the steps of determining the position of a centroid of the selected object and applying the Kalman predictive algorithm to the centroid (column 6 line 64 to column 7 line 38).

As per claim 6, Qian discloses the method according to claim 4, wherein step © includes the steps of determining the position of a centroid based on a color function of the selected object and applying the Kalman predictive algorithm to the centroid (column 4 line 40 to column 5 line 19; column 6 line 64 to column 7 line 38).

As per claim 7, Qian discloses the method wherein step (c) includes the steps of determining the position of a centroid based on luminance 9column 4, lines 40-55; lightness or brightness can read on luminance) of the selected object and applying the Kalman predictive algorithm (column 6 line 64 to column 7 line 38) to the centroid.

As per claim 8, Qian discloses the method wherein each image frame is resolved into multiple blocks and step (a) comprises the step of segmenting the initial frame based on color of the blocks (column 5, lines 10-26; image frame 40 in figure 2 is divided into object and the background based on the color in the cluster).

Allowable Subject Matter

3. Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other prior art cited

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Covell et al. (US. 6,188,776 B1) discloses principle component analysis of images for the automatic location of control points.

Shackleton et al. (US.5,719,951) discloses normalized image feature processing.

Murching et al. (US. 6,526,169 B1) discloses histogram-based segmentation of object from a video signal via color moments.

Gu et al. (US.6,711,278 B1) discloses tracking semantic objects in vector image sequences.

Murching et al.(US.6,381,363 B1) discloses histogram –based segmentation of images and video via color moments.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is 703-305-4876. The examiner can normally be reached on Monday - Thursday 6 - 7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 703-308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**BHAVESH M. MEHTA
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SCC
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August 16, 2004